

CLAIMS

1 1. A system for combining spatial and linear (attribute) data in a single
2 relational database, comprising:
3 a computing device having a user interface;
4 a relational database connected to the computing device and accessible by
5 structured query language, the database comprising spatial and attribute data related to
6 geographic information; and
7 means for providing dynamic segmentation of permanent anchor sections, an
8 anchor section defining a spatial reference for a geographic element in the relational
9 database.

1 2. A system as recited in claim 1, wherein the relational database is
2 accessed via an object-oriented front-end.

1 3. A system as recited in claim 1, wherein the relational database further
2 comprises:
3 integrated temporal data for maintaining historical records.

1 4. The system as recited in claim 1, wherein the relational database is also
2 accessible by a graphical information system viewing application.

1 5. A system as recited in claim 1, further comprising means for
2 performing automated database maintenance, making the multiple databases of road
3 network data consistent with one another.

1 6. A system as recited in claim 1, further comprising:
2 at least one additional computing device connected to the relational database,
3 wherein the relational database is stored in a distributed data environment.

1 7. A method for combining spatial and linear (attribute) data in a single
2 relational database, comprising:
3 providing permanent anchor sections representing physical sections of a
4 roadway, an anchor section defining a spatial reference in road data, the anchor
5 sections also integrated with linear data to form a road network;
6 associating attributes and linear events with positions in the road network;
7 storing linear event data related to anchor sections in a relational table;
8 storing road attribute data by associating each attribute with locations specified
9 in terms of a linear referencing method (LRM);
10 implementing a dynamic segmentation function for conducting dynamic
11 segmentation on a selective basis;
12 maintaining historical data related to anchor sections and linear event data;

13 enabling the creation of an interior intersection within the road data, where an
14 interior intersection to an anchor section is defined by offsets from an end of the
15 anchor section;

16 synchronizing spatial and linear data, for tying spatial data to a physical
17 location represented by the road network; and

18 utilizing meta-data definitions for database elements in a data dictionary, the
19 data dictionary defining an implementation of the relational database, resulting in an
20 extensible relational database model.

1 8. A method as recited in claim 7, further comprising:

2 dynamically segmenting permanent anchor sections by adding interior
3 intersections using offset information.

1 9. A method as recited in claim 7, wherein the database model uses an
2 open architecture.

1 10. A method as recited in claim 7, wherein linear event data is stored by
2 storing each value anchored linear event combination in a separate table record.

1 11. A method as recited in claim 7, wherein linear event data is stored by
2 storing each value anchored linear event combination in a different table record with